

REMARKS

The application has been amended to place it in condition for allowance at the time of the next Official Action.

Claims 3-7 and 9-22 are presented for consideration.

Independent claims 3, 6, 13, 15, 16 and 18-22 are amended consistent with the disclosure in paragraphs [0046] and [0055] of the specification.

Claims 3-6, 9, 12 and 17-19 were rejected under 35 USC §103(a) as being unpatentable over MILEY et al. 6,171,451 in view of CHANG 5,916,642. That rejection is respectfully traversed.

The position set forth in the Official Action is that MILEY does not expressly disclose collision ions, but since MILEY discloses an electrical discharge in the hydrocarbon gas resulting in molecules and ionization of component atoms under grid voltage, one would expect the generation of collision ions in the production apparatus.

However, even if that assumption were true, MILEY does not suggest that the collision ions have diameters that are larger than those of cyclic rings of fullerene molecules or nanotube molecules and have the same polarity as the encapsulation target ions.

Moreover, MILEY does not suggest colliding the collision ions with the fullerene molecules or nanotube molecules, to deform the cyclic rings and thereby cause the

fullerene molecules or nanotube molecules to encapsulate the encapsulation target ions, respectively.

By contrast, MILEY uses inertial electrostatic confinement (IEC) to produce fullerene from carbon-based gases having a high chemical reactivity. See column 4, lines 61-65. Thus, in MILEY, the end product is the fullerene. MILEY does not suggest colliding the collision ions with the fullerene molecules or nanotube molecules, to deform the cyclic rings of the fullerene molecules or nanotube molecules.

As noted in the Official Action, CHANG discloses a nanotube encapsulating a material. However, the encapsulation in CHANG is based on graphite sheets wrapping around themselves (see column 3, lines 11-14). The sheets wrap around the filling species during flight between the source and the collection plate (see column 4, lines 6-12). CHANG does not suggest colliding collision ions with the fullerene molecules or nanotube molecules, to deform the cyclic rings (of such molecules) and thereby cause the fullerene molecules or nanotube molecules to encapsulate encapsulation target ions.

The above-noted features which are missing from each of the references would not somehow emerge from any proper combination of these references.

Accordingly, it would not have been obvious to modify MILEY in view of CHANG to meet claim 3. Independent claim 6, 18 and 19 include similar features and the analysis above regarding

claim 3 as to the common features also applies to claims 6, 18 and 19. The dependent claims are believed to be patentable at least for depending from an allowable independent claim.

Claims 7, 13-16 and 20-22 were rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of FETHERSTON et al. 5,693,376. That rejection is respectfully traversed.

FETHERSTON is only cited with respect to a magnetic field generation means. FETHERSTON does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 6. Since claim 7 depends from claim 6 and further defines the invention, claim 7 is believed to be patentable at least for depending from an allowable independent claim.

Claims 13-16 are directed to apparatuses for producing encapsulating-fullerene or encapsulating-nanotubes including plasma generation means in one side of a vacuum vessel for generating plasma including encapsulation target ions and collision ions, the collision ions having diameters that are larger than diameters of cyclic rings of fullerene molecules or nanotubes molecules and having the same polarity as said encapsulation target ions.

As set forth above, MILEY does not disclose the recited collision ions and thus could not disclose an apparatus for producing such ions. As also set forth above, CHANG is based on a different encapsulation process that uses a different

encapsulation apparatus and does not meet the recited production apparatus of encapsulating-fullerene or encapsulating-nanotube material film. Thus, MILEY in view of CHANG does not suggest the recited apparatus.

FETHERSTON does not overcome the shortcomings of MILEY and CHANG and thus, the proposed combination of references does not meet claims 13-16.

Claim 10 was rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of TAKEHARA et al. US Publication No. 2005/0129607. That rejection is respectfully traversed.

TAKEHARA is only cited with respect to features of dependent claim 10. TAKEHARA does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 6. Since claim 10 depends from claim 6 and further defines the invention, claim 10 is believed to be patentable at least for depending from an allowable independent claim.

Claim 11 was rejected under 35 USC §103(a) over MILEY et al. in view of CHANG and further in view of LIU et al. Chemical Physics Letters, 331 (2000) pages 31-34. That rejection is respectfully traversed.

LIU is only cited with respect to features of dependent claim 11. LIU does not overcome the shortcomings of MILEY and CHANG set forth above with respect to claim 3. Since claim 11 depends from claim 3 and further defines the invention, claim 11

is believed to be patentable at least for depending from an allowable independent claim.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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